ARTICLE 9. CROSS CONNECTION CONTROL AND BACKFLOW PREVENTION

DIVISION 1. GENERALLY

Sec. 86.551. Purposes.

The purposes of the this article are to:

(1) Protect the city potable water system from contamination or pollution by preventing contaminants and pollutants within the water systems of customers from entering the city water system.

(2) Provide for the maintenance of a continuing program of cross connection control by requiring the installation of approved backflow prevention assemblies as required by the plumbing code adopted under chapter 14 of this Code, and requiring the certification and operational testing of all testable backflow prevention assemblies.

(3) Comply with federal regulations related to cross-connections and backflow prevention, including without limitation, those of the Occupational Safety & Health Administration and the Environmental Protection Agency.

(4) Comply with state regulations related to cross-connections and backflow prevention, including, without limitation, those of the Texas Natural Resource Conservation Commission.

(Ord. No. 2001-58, § 1, 8-13-01)

Sec. 86.552. Applicability.

This article applies to all connections to the city potable water system, and to all installations of backflow prevention assemblies related to the city's potable water system, regardless of whether the connection or assembly is located within the city limits of San Marcos or in the city's certificated water service area, and regardless of whether the connection or assembly is for a retail, wholesale, or other customer or user of the city potable water supply system.

(Ord. No. 2001-58, § 1, 8-13-01)

Sec. 86.553. Definitions.

Air gap separation means a physical separation between the free flowing discharge end of a city water system pipeline and an open or unpressurized receiving line or vessel.

Approved assembly is a backflow prevention assembly that has been approved, manufactured, tested and approved in accordance with the standards adopted by the AWWA, or approved and listed by the University of Southern California Foundation for Cross Connection Control and Hydraulic Research.

Auxiliary water supply means any water supply on or available to a customer's premises from a source other than directly through the city water supply. Auxiliary water supplies include all of the following:

(1) Water from another public water system.

(2) Water from a natural source, such as a well, spring, pond, river or creek.

(3) Reclaimed water.

(4) Any water supplied by a public water system, including the city water system, that has passed through a point of delivery and is no longer controlled by the public water system.

AWWA means American Water Works Association.
Backflow means the reversal of flow of water and/or mixtures of water and other liquids, gases, or other substances from a customer's side of the service connection into the city water system. Backflow may occur under either a backpressure or back siphonage condition.
Backflow prevention assembly or *assembly* means a device or aggregation of devices designed to prevent backflow, including reduced pressure backflow assemblies, double-check valve assemblies, atmospheric vacuum breakers, pressure vacuum breaker assemblies or an air gap.
Backpressure means any situation where the pressure in a customer's system is higher than in the city water system.
Back siphonage occurs when the pressure in the public water system becomes less than that of the customer's system due to a vacuum in the public system.
Building official means the person designated as the building official in the building code adopted in chapter 14 of this Code.
Bypass means a connection from the city side of a backflowprevention assembly to the customer side of the assembly for the purpose of diverting the water around the assembly while it is being repaired or replaced.
Certified backflow prevention assembly tester or *certified tester* means a person who has received certification as a backflow prevention assembly tester from the TNRCC by successfully completing a TNRCC-approved certification school.
Check valve means a valve that seats readily and completely to completely cease the flow of water.
City water system means the entire potable water distribution system of the city, including, without limitation, all pipes, facilities, valves, pumps, conduits, tanks, receptacles and fixtures and appurtenances between the water supply source and the point of delivery, used by the city to produce, convey, deliver, measure, treat or store potable water for public consumption or use.
Contamination means the presence of any foreign substance (organic, inorganic, radiological or biological) in water that tends to degrade its quality so as to constitute a hazard or impair the usefulness of the water. *Contamination* includes both hazardous contaminants and pollutants.
Cross connection means any physical connection between the city water system and another water system or source, through which backflow may occur.
Customer means any person that is supplied potable water by or through the city water system, including, without limitation, retail and wholesale customers and persons using a portion of the city water system for water transmission purposes.
Customer's system means the entire plumbing system, including all pipes, conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey, store or utilize potable water between the point of delivery and the customer's point of use.
Director means the director of the city water and wastewater department, or another official designated by the city manager.
Hazardous contaminant means any form of contamination that poses a health hazard with respect to the use of water for drinking or other domestic purposes.
Plumbing code means the current version of the plumbing code adopted in chapter 14 of this Code.

Point of delivery means the point at which water leaves the city water system and enters a customer's system at or near the property line or the edge of an easement. When a water meter is installed on or near the property line or edge of an easement, the "point of delivery" is the terminal end on the discharge side of the water meter.
Pollutant means a substance that impairs the quality of water in a manner or to a degree that does not create a hazard to public health, but may adversely affect the aesthetic qualities of the water for domestic use.
Potable water means water that complies with TNRCC rules for drinking water and other domestic uses.
Service connection means the terminal end of a service connection from the city water system, i.e., where the city loses jurisdiction and sanitary control over the water at the point of delivery to the customer. If a meter is installed at the point of delivery, the "service connection" means the point at which the terminal end on the discharge side of the water meter connects to the customer's system.
TNRCC means the Texas Natural Resource Conservation Commission or its predecessor or successor agencies.
(Ord. No. 2001-58, § 1, 8-13-01)

Sec. 86.554. Conflicts with other ordinances.
If there is a conflict between a provision of this article and the plumbing code or any other provision of this Code, the most restrictive provision will apply.
(Ord. No. 2001-58, § 1, 8-13-01)
Secs. 86.555--86.570. Reserved.

DIVISION 2. AUTHORITY AND RESPONSIBILITY

Sec. 86.571. Director of water and wastewater.
(a) The director of water and wastewater is responsible for enforcing the requirements of this article with respect to connections made to the city water system.
(b) To ensure adequate protection in individual cases, the director may assess and determine the degree of hazard to the public potable water system posed in the case of individual connections, customers or users.
(c) When the director determines that a backflow prevention assembly is required for the protection of the city water system, the director will require the customer, at the customer's expense, to properly install an approved assembly at each service connection or hazard point.
(d) The director will make periodic inspections to verify that proper records of the installation and maintenance of backflow prevention assemblies are maintained by customers in accordance with this article.
(e) The director may refuse to initiate service, or may discontinue service, to any customer that maintains an actual or potential sanitary hazard in the customer's system, or whose plumbing is susceptible to cross connections, where the director determines that adequate protection against backflow is not provided.
(Ord. No. 2001-58, § 1, 8-13-01)

Sec. 86.572. Authority of building official.

(a) The building official designated under chapter 14 of this Code is responsible for enforcing all provisions of the plumbing code pertaining to cross connections, i.e., proper installation of each customer's system, including the connection to the city water system.
(b) The building official will coordinate all building permit approvals to ensure compliance with this article.
(c) The building official will appoint a representative to the cross connection control committee.
(Ord. No. 2001-58, § 1, 8-13-01)

Sec. 86.573. Cross connection control committee.
(a) A cross connection control committee is established. The committee will consist of one representative each from the water and wastewater department, health department, building inspections division, and fire marshal's office, and a Texas-registered professional engineer and a Texas-licensed plumber appointed by the director.
(b) The cross connection control committee will serve as an advisory body to the director and the building official on matters related to the administration, interpretation and enforcement of this article.
(Ord. No. 2001-58, § 1, 8-13-01)

Sec. 86.574. Certified backflow prevention assembly testers.
(a) *Registration of testers.* Each person who wishes to perform services as a certified tester for a city water system customer must submit a completed registration form to the director, and must furnish evidence to show that the person has available the necessary tools and equipment to properly test backflow prevention assemblies. The director will refuse to accept test results or other performance of services by a certified tester if the tester is not currently registered with the director. If a tester is a representative of an equipment manufacturer, the tester will be restricted to testing assemblies produced by the manufacturer they represent. The director will maintain a current list of approved testers, and will make this list available to customers upon request. Each certified tester must renew the registration with the director every three years. The director may suspend or remove a certified tester from the current registration list for improper testing or reporting.
(b) *Testing equipment.* The certified tester must be equipped with and competent to use all the necessary tools, gauges, manometers and other equipment necessary to properly test, repair and maintain backflow prevention assemblies. The certified tester must furnish the city with the serial number of the tester's test kit, and the tester's test gauge must be tested when purchased and annually thereafter, or more frequently as required by the director. The certified tester must maintain the test gauge to a ±2% accuracy.
(c) *Responsibility of certified tester.* When employed by a customer, the certified tester is responsible for the testing of the customer's backflow prevention assemblies. The tester is responsible for the competency and accuracy of all tests and reports performed or submitted by the tester, and for all work done by any persons under the tester.
(d) *Immediate reports by certified tester.* If a backflow prevention assembly test fails, or an assembly malfunctions, the certified tester must immediately notify the director and the customer in writing, and the tester must take all reasonable steps, including the

cessation of water service through the assembly, to prevent the contamination of the city water system.
(e) *Inspection and repair.* Each customer, when repairing or overhauling backflow prevention assemblies, must use a licensed plumber who is a certified tester. The certified tester will make reports of the repair to the customer and the director on the TNRCC test and maintenance report form. The certified tester must include in the report a list of materials or replacement parts used. The tester must ensure that parts recommended by the manufacturer of the assembly or device being repaired are used in the repair or replacement of parts in the assembly or device.
(f) *Procedure and equipment.* It is unlawful for a certified tester to change the design, material, or operational characteristics of a backflow prevention assembly during repair or maintenance without prior approval of the director. All work performed by a certified tester's assistants must be performed in the tester's presence, and the tester is responsible for all such work.
(Ord. No. 2001-58, § 1, 8-13-01)

Sec. 86.575. Responsibilities of customers.
(a) Each customer has the primary responsibility of preventing contaminants from entering the customer's system or the city water system. This responsibility starts at the point of delivery, and includes the customer's complete internal water system.
(b) Each customer, as a condition of providing water service, must allow city water and wastewater department personnel access to the customer's property to inspect and survey the customer's system for potential contamination and backflow hazards.
(c) The customer, at the customer's expense, must install, operate, test and maintain approved assemblies as required by this article. After any repair or overhaul of an assembly, the customer must have it tested by a certified tester to ensure it is in proper operating condition. A customer must apply for and obtain a permit from the director or the building official for the repiping or relocation of a backflow prevention assembly. Upon completion of any such work, the customer must have the assembly retested by a certified tester. The customer must maintain accurate TNRCC test and maintenance report forms for all tests and repairs made to backflow prevention assemblies, and must provide the director with copies of these reports on request.
(Ord. No. 2001-58, § 1, 8-13-01)
Secs. 86.576--86.589 Reserved.

DIVISION 3. STANDARDS AND REQUIREMENTS

Sec. 86.590. General requirements.
(a) The TNRCC Rules and Regulations for Public Water Systems, as amended from time to time, will govern the design, construction, operation and maintenance of the city water system with respect to cross connection control and backflow prevention. Each customer must comply with all applicable provisions of these rules and regulations.
(b) It is unlawful for a customer to cause or allow water from an auxiliary water supply to enter the city water system.
(c) It is unlawful for a person to make a connection from the city water system to a customer's system where an actual or potential contamination hazard to the city water

system exists and there is no air gap separation between the drinking water supply and the source of potential contamination. Where a containment air gap is impractical and, instead, an individual internal air gap or mechanical backflow prevention assembly is used, a backflow prevention assembly will be required at the service connection in accordance with AWWA Standards C510 and C511, and AWWA Manual M14, on those establishments handling substances deleterious or hazardous to the public health. This requirement does not apply if the customer maintains an adequate cross-connection control program that includes an annual inspection by a certified tester.

(d) It is unlawful for a person to make any connection from the city water system to any condensing, cooling or industrial process or any other system of nonpotable usage over which city water system officials do not have sanitary control, in a manner that does not fully comply with the requirements of subsection (c) above. It is unlawful for any person to cause or permit backflow from any such process to the city water system.

(e) All backflow prevention assemblies must be tested upon installation by a certified tester, and must be certified to be operating within specifications. Backflow prevention assemblies which are installed to provide protection against hazardous contaminants must also be tested and certified to be operating within specifications at least annually by a certified tester.

(f) Gauges used in the testing of backflow prevention assemblies must be tested for accuracy annually in accordance with the University of Southern California's Foundation of Cross Connection Control and Hydraulic Research and/or the American Water Works Association Manual of Cross Connection Control (Manual M-14). Each certified tester that performs tests related to the city water system must include test gauge serial numbers on all test and maintenance report forms to verify that the tester uses gauges tested for accuracy.

(g) A test report must be completed by the recognized backflow prevention assembly for each assembly tested. The signed and dated original must be submitted to the city for record keeping purposes. If the tester chooses to use a report which differs from the TNRCC form, it must contain at least all of the information required by the TNRCC form.

(h) Each certified backflow prevention assembly tester that performs tests related to the city water system must retain all test and maintenance reports for at least three years, and must make the reports related to the city water system available to the director at the director's written request.

(i) The use of a backflow prevention assembly at a service connection will be considered an additional backflow prevention, and will not negate the need for use of backflow prevention on internal hazards as defined in this article or the plumbing code.

(j) It is unlawful for a customer to install, or to cause or permit the installation of, a bypass that has not been approved in advance by the director. All bypasses on backflow prevention assemblies must themselves include provisions for backflow prevention as described in this article.

(Ord. No. 2001-58, § 1, 8-13-01)

Sec. 86.591. Types of backflow prevention.

(a) *Air gap separation* or *A/G.* An air gap installation separating the city water system from the customer's system is acceptable in all situations listed in this article as long as it

is properly maintained. Since air gap installation separations are easily eliminated or bypassed, the director may perform field surveys and require the additional protection of a mechanical backflow prevention assembly. The air gap separation must be located as close as practical to the city water meter, and normally all piping between the meter and the receiving tank must be entirely visible. An approved air-gap separation must be at least double the diameter of the supply pipe measured vertically above the overflow rim of the vessel, but in no case less than one inch (2.54 cm).

(b) *Atmospheric vacuum breaker* or *AVB.* This is a device consisting of a float check, a check seat, and an air inlet port. A shutoff valve immediately upstream may be an integral part of the device. The AVB is designed to allow air to enter the downstream water line to prevent back siphonage. This unit must never be subjected to a back pressure condition or have a downstream shutoff valve, and must not be installed where it will be in continuous operation for more than 12 hours.

(c) *Check valve.* Each check valve must be carefully machined to save free moving parts and assure water tightness, permitting no leakage in a direction reverse to the normal flow. The valve must be weighted or spring loaded to one pound per square inch in the direction of the flow. The face of the closure element and valve seat must be of bronze composition or other noncorrodible material which will seat tightly under all prevailing conditions of field use. Pins and bushings must be of bronze or other noncorrodible, nonsticking material, machined for easy, dependable operation. The closure element, normally referred to as a clapper, must be internally weighted or otherwise internally equipped to promote rapid and positive closure in all sizes where this feature is obtainable.

(d) *Double check valve assembly* or *DCVA.* This is an assembly composed of two independently acting, approved check valves, including tightly closing resilient-seated shutoff valves located at each end of the assembly, and fitted with properly located resilient-seated test cocks.

(e) *Double check detector assembly* or *DCDA.* This is a specially designed assembly composed of a line-sized approved double check valve assembly with a bypass containing a specific water meter and an approved double check valve assembly. The meter in a DCDA must register accurately for only very low rates of flow (up to three gallons per minute) and must register all rates of flow. This assembly must only be used to protect against a pollutant. The DCDA is primarily used on fire sprinkler systems.

(f) *Pressure type vacuum breaker* or *PTVB.* This is an assembly containing a single loaded check valve and an air opening which admits air whenever the pressure within the body of the assembly is reduced so that there is a tendency toward back siphonage. The body of the assembly must be equipped with two tight closing shutoff valves, one immediately upstream from the body and one immediately downstream of the body, and two properly located test cocks. It must be designed to operate under pressure for long periods of time without becoming inoperative, making it possible to isolate a lawn sprinkler from the potable system. It must be installed so that it is never subject to backpressure.

(g) *Reduced pressure backflow prevention assembly* or *R/P.* This is a device consisting of two independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and below the first check valve. These units are located between two tightly

closing resilient-seated shutoff valves and are fitted with properly located resilient seated test cocks.
(Ord. No. 2001-58, § 1, 8-13-01)

Sec. 86.592. Types of backflow prevention required.
(a) The degree of protection and the type of protection deemed necessary to prevent backflow and possible contamination of the city water system are outlined in this section. Cross connections vary widely in degree of contamination hazard. Backflow may occur under many different pressure differentials, varying from vacuum to very high pressures. The protection afforded by a backflow prevention assembly depends upon its type, the circumstances in which it is installed, and on its proper installation, testing and maintenance.
(b) *Criteria for selection of backflow prevention assemblies.* The selection of an appropriate backflow prevention assembly depends upon the degree of hazard involved and will be based on the following criteria:
(1) Whether or not the assembly could ever be subject to backpressure due to the customer's internal pumping pressures or elevation differentials.
(2) The nature of contaminating material under the most critical circumstances.
(3) The extent to which additions may be made to the plumbing system at a later date which would affect the initial selection of the assembly.
(4) The frequency with which a water supply could be exposed to a hazardous condition.
(5) The degree of protection of the water supply as provided by the local plumbing code as enforced by the building inspections division.
(c) *Decisions on selection of backflow prevention assembly.* The director, acting either personally or through a representative, will have the final approval authority over the type of backflow prevention assembly to be used in each individual case. The director may, in making this decision, obtain the advice and recommendation of the cross connection control committee.
(d) All types of establishments listed below must provide for the containment of contamination within their premises, either by an air gap separation between the meter and the first tap or tee, or by having each of the internal plumbing facilities properly air gapped. If the containment air gap separation is impractical, and reliance is placed instead on individual internal air gaps or vacuum breakers in a customer's system, the director may require additional protection in the form of either an R/P assembly, for customers handling hazardous contaminants, or a D/C assembly, for customers handling pollutants.
(e) In some instances, the director may require a customer to use total containment backflow prevention to allow the backflow prevention assembly to be installed on an internal branch line. An example of this would be for a combination fire and domestic water service from the city water supply. The backflow prevention for the domestic use would be installed immediately after the fireline tee. In such a case, the fireline must be provided with its own separate backflow prevention.
(f) *Type of device or assembly required.*
TABLE INSET:

A/G	Air Gap Separation
R/P	Reduced Pressure Backflow Prevention Assembly
D/C	Double Check Valve Assembly
DCDA	Double Check Detector Assembly
PTVB	Pressure Type Vacuum Breaker
AVB	Atmospheric Vacuum Breaker

TABLE INSET:

Type of Use	Device or Assembly
Animal feedlots	R/P
Apartments and condominiums --4 stories or more	R/P
Auxiliary water supply	R/P
Breweries	R/P
Building--Four stories or more	R/P
Canneries, packing houses and rendering plants	R/P
Cold storage facilities	R/P
Commercial car wash	R/P
Commercial laundries	R/P
Dairies	R/P

Dye works	R/P
Fire Line (with chemical additive)	R/P
Fire Line (with fire hydrant)	DCDA
Fire Line (without fire hydrant)	DCDA
Food and beverage processing/packing plant	R/P
Greenhouse (with chemical)	R/P
Greenhouse (without chemical feed)	D/C
Hospitals, morgues, mortuaries, medical clinics, autopsy facilities, sanitariums, and medical labs	R/P
Irrigation system (auxiliary water supply)	D/C
Irrigation system	D/C or PTVB or AVB
Irrigation system (with fertilizer injector)	R/P
Laboratory--Chemical or clinical	R/P
Laundry and dry cleaning plants	R/P
Laundry and dry cleaning plant--Retail	R/P
Lease space (two or more--Single service)	D/C
Metal manufacturing, cleaning, processing and fabrication plants	R/P
Microchip fabrication facilities	R/P
Paper and paper products plants	R/P

Petroleum processes and storage plant	R/P
Photo and film processing labs	R/P
Plants using radioactive material	R/P
Plating or chemical plant	R/P
Power plant	R/P
Private well supply	A/G or R/P or D/C
Reclaimed water systems	R/P
Restricted, classified or other closed facilities	R/P
Rubber plants	R/P
Sewage lift stations	R/P
Sewage treatment plants	R/P
Slaughter houses	R/P
Steam plants	R/P
Stock yard	R/P
Schools--Colleges, universities, high schools, intermediate schools, middle schools (elementary schools --individual review)	R/P
Transportation terminal	R/P

Uses not listed in this table may require backflow prevention through air gaps or backflow prevention assemblies depending on the nature of the use, the equipment and the plumbing system. These will be determined on an individual basis by the director.

(g) *Auxiliary water supplies.* Where a customer is served by an auxiliary water supply in addition to the city water system, all applicable TNRCC regulations must be followed, and the director will determine the type of backflow prevention assembly to be used.

(h) *Backflow prevention for firelines.*

(1) Backflow prevention is required on all new fireline installations. The type and extent of backflow prevention needed for a particular fire protection system is subject to approval by the director. Pressure losses across backflow prevention assemblies must be accommodated in the design or redesign of a fire protection system. This factor is particularly important when redesigning existing fire protection systems. All backflow prevention assemblies for fireline installations must be Underwriters Laboratory listed.
(2) Backflow prevention requirements for firelines:
TABLE INSET:

Type of Fireline	Device or Assembly
Fireline with no chemical additive and no additional water supply	D/C
Fireline with fire hydrant --no chemical additive and no additional water supply --less than 100' total piping from property line	DCDA (Standard Drawing DD-40-35 thru DD-40-36; vault detail standard drawing DD-30-05)
Fire protection system utilizing chemical additives*	A/G or R/P
Fire protection system with access to an auxiliary water supply**	A/G or R/P

* Systems with chemical loops and/or foam injection will require a reduced pressure principle backflow prevention assembly at the loop or foam injection point; however, an expansion chamber or relief valve will have to be installed to compensate for thermal expansion in accordance with the fire code. The installation of reduced pressure principle assemblies for containment backflow prevention on firelines should be avoided and installed only in situations where chemical injection occurs prior to any taps or tees.

** Existing chemical loops and systems with access to an auxiliary water supply must be retrofitted with an approved assembly.
(3) Tri-water system or circulated closed-loop systems, such as a combination fireline, heating and cooling system, are prohibited.
(4) Full-flow testing or assembly tear-down requirements for firelines. Backflow prevention assemblies installed on firelines must either be full-flow tested at least once each five years, or must be completely torn down and rebuilt at least once each five years if full-flow testing cannot be accomplished. The assembly must be cleaned and all rubber parts replaced when deemed necessary by the certified tester or the assembly manufacturer. Assemblies must be tagged by the tester to indicate the tear-down date. If within a five year period, an assembly is torn-down, a new five year tear-down period will begin at that time. If a backflow prevention assembly is found to be malfunctioning in an annual testing process, the assembly must be completely torn-down and rebuilt at that time. The director will track individual assemblies to ensure compliance with these requirements.

(5) Test and maintenance report form for fireline backflow prevention assemblies. Test and maintenance report forms used by fireline testers must include a confirmation that the system has been placed back in operation upon completion of a test. Additionally, these forms must include an indication by the tester of whether a flow test was performed on an assembly within the previous 12 months as established in NFPA 25 Section 9.6.2.2. The tester will attach full-flow documentation to the form when submitted to the director.
(6) Single check valve. The single check valve is not considered to be an approved assembly, and will be used only in limited instances such as for directional flow control.
(Ord. No. 2001-58, § 1, 8-13-01)
Secs. 86.593--86.599. Reserved.

DIVISION 4. PROCEDURES

Sec. 86.600. In general.
(a) The procedures outlined in this division are based on the principle of containment of all actual and potential contamination hazards within the customer's system.
(b) A customer may request approval from the director for a proposed deviation from or exception to the standards in this article. The director may approve a deviation or exception only if it does not involve a significant risk of increased contamination to the city water system.
(c) If a customer refuses to allow access to water and wastewater department representatives for an inspection or a water use survey, the director may either refuse or discontinue the customer's water service, or assume that a high contamination hazard exists, and therefore require the highest degree of protection on the customer's system.
(Ord. No. 2001-58, § 1, 8-13-01)

Sec. 86.601. New facilities.
(a) All new facilities are required to comply with the requirements of this article. Compliance by a new city water system customer with the requirements for installation of one or more backflow prevention assemblies will be verified in conjunction with the customer's application for water service, or with the customer's building and plumbing permits.
(b) The director may require field inspection of the customer's premises, in addition to plan submittal and review, to determine the actual or potential hazards and backflow prevention assembly requirements.
(c) All mechanical layouts or building plans submitted to the building inspections division will be reviewed to assure compliance with the requirements of this article and the plumbing code. All mechanical layouts or plans will be stamped by the building inspections division to indicate that containment backflow prevention may be required, and contact must be made with the director for a determination.
(d) A new customer's application for water service must be accompanied by a mechanical layout or plan for all proposed structures to be connected to the city water system, showing or describing all plumbing arrangements and indicating the proposed type and size of backflow prevention assemblies to be installed. This information will be routed through the director to ensure compliance with the provisions of this article. Upon

installation and testing of the approved assembly or air gap arrangement, the director will make a record of the installation.
(e) *Customer service inspections.* In accordance with TNRCC's Rules, the director will require a customer service inspection certification in all of the following:
(1) Prior to providing continuous water service to new construction;
(2) On any existing service when the water purveyor has reason to believe that cross connections or other unacceptable plumbing practices exist; and
(3) After any substantial improvement, alteration, correction, or addition to a customer's system.
(Ord. No. 2001-58, § 1, 8-13-01)

Sec. 86.602. Existing facilities.
(a) *Inspection procedure.* The director will inspect the existing facilities of all city water system customers of the types listed in section 86.592(f), (g) or (h), that do not have a record of backflow prevention assembly installation on file in the water and wastewater department. After the inspection is completed, the director will provide a written notice to the customer advising of the backflow prevention assembly requirements for the customer's system.
(b) *Building inspections--Plan review.* Plans submitted to the building inspections division for approval of plumbing modifications, or additions to an existing plumbing system, will be reviewed by the director to determine the type of backflow prevention method or assembly required for the entire establishment. The method and type of assembly required will be noted on the plans.
(Ord. No. 2001-58, § 1, 8-13-01)

Sec. 86.603. Records and tests.
(a) In order to assure that backflow prevention assemblies continue to operate satisfactorily, each customer that is required to use an assembly is required to have periodic testing of the assembly performed in accordance with this section. All assemblies must be tested at the time of installation, and at the time of any repair or relocation. All tests and repairs must be performed by a certified tester. The tester must complete a test and maintenance report form and submit the form to the director. It will be the responsibility of the customer to initiate the testing and any maintenance determined by the test to be necessary, and to submit written results to the director.
(b) *Time schedule.* All assemblies must be tested in accordance with the following schedule:
TABLE INSET:

Reduced pressure	Annually
Double check assembly	Every 3 years

Double check detector assembly	Every 3 years
Pressure type vacuum breaker	Annually
Atmospheric vacuum breaker	Annually

(c) Testing by city. City personnel may perform periodic tests on assemblies at random locations to ensure that acceptable test standards are being followed by certified testers. City personnel may also randomly select and tag assemblies in a manner that will determine if the assemblies have been tested as required.
(Ord. No. 2001-58, § 1, 8-13-01)

Sec. 86.604. Costs.
All costs associated with compliance with this article, including purchase, installation, testing, maintenance, repair and replacement are to be borne by the customer. Advisory assistance may be requested from the water and wastewater department and building inspection divisions without charge.
(Ord. No. 2001-58, § 1, 8-13-01)

Sec. 86.605. Penalty; disconnection.
(a) A person who knowingly or intentionally violates, or causes or permits the violation of, any provision of this article commits a misdemeanor, and is subject to the penalty provided in section 1.015 of this Code upon conviction. Each day of an ongoing violation will be deemed to be a separate violation.
(b) Failure, refusal or inability on the part of a customer or user to comply with any provision of this article will constitute grounds for refusing or discontinuing water service.
(Ord. No. 2001-58, § 1, 8-13-01)
Secs. 86.606--625. Reserved.